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**VIA ELECTRONIC FILING**

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 Twelfth Street, S.W.  
Washington, DC 20554

**RE: In the Matter of**  
**Public Safety Network in the 700 MHz Broadband**  
**PS Docket No. 06-229 / WT Docket No. 06-150 / RM-11348**  
**Ex Parte Presentation**

Dear Secretary Dortch:

On behalf of Cyren Call Communications Corporation ("Cyren Call"), and in accordance with Section 1.1206(b) of the Commission's Rules, 47 C.F.R. § 1.1206(b), undersigned counsel hereby submits the instant notice of an *ex parte* presentation.

On Wednesday, April 3, 2007, Thomas Sidman, Robert Burkhardt, David Martin, Elizabeth Sachs and I met with members<sup>1</sup> of the Commission's Office of Engineering and Technology to discuss its Reply Comments in the above-referenced Dockets and the response thereto from CTIA. The essence of Cyren Call's presentation is contained in the accompanying attachment to this letter.

Kindly refer any questions or correspondence regarding this matter to the undersigned.

Very truly yours,

/s/

Leonard S. Kolsky

Enclosure

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<sup>1</sup> Commission attendees were: Julius Knapp, Ira Keltz, Patrick Forster, Mark Settle, Alan Stillwell, Saurbh Chhabra, Ron Chase and Nicholas Oros

# *Cyren Call Communications*

A horizontal banner featuring a stylized American flag with stars and stripes.

## ***Next Generation Public Safety Communications Network***

*Cyren Call Proposal and Capacity Model Overview*

*[Including Responses To CTIA Reply Comments*

*Filed: 03/12/07, In the Matter of*

*Docket 96-86, 9<sup>th</sup> NPRM]*

# Public Safety Broadband Trust Proposal

# Public Safety Broadband Trust Proposal: Key Points

- Public Safety needs a nationwide, state-of-the-art, mobile, interoperable, broadband mission-critical data and video network
- Public Safety does not have adequate available spectrum to support deployment of such a mobile broadband network
- Financing for the network build must come from private sources
- 30 MHz of 700 MHz spectrum is required to attract the needed private investment for this innovative shared public/private network, to replace traditional reliance on federal funding
- A single non-profit entity, representative of and controlled by local, state and federal Public Safety users – not a for-profit, private entity – must control the network by holding the license

### 3 Key Features of the Nationwide Public Safety Network

- *Funding*

- As Public Safety, the FCC and many others have recognized, a nationwide wireless broadband network, built to public safety specifications, must have a reliable source of sufficient funding – in the absence of initial and ongoing multi-billion governmental funding commitments, those funds must come from a public/private partnership

- *700 MHz Spectrum*

- 30 MHz of spectrum is required to support the projected usage demands of the Public Safety, critical infrastructure and commercial user bases, since these users (especially the commercial users) will generate the revenue to pay for the build-out and on-going operations of this network

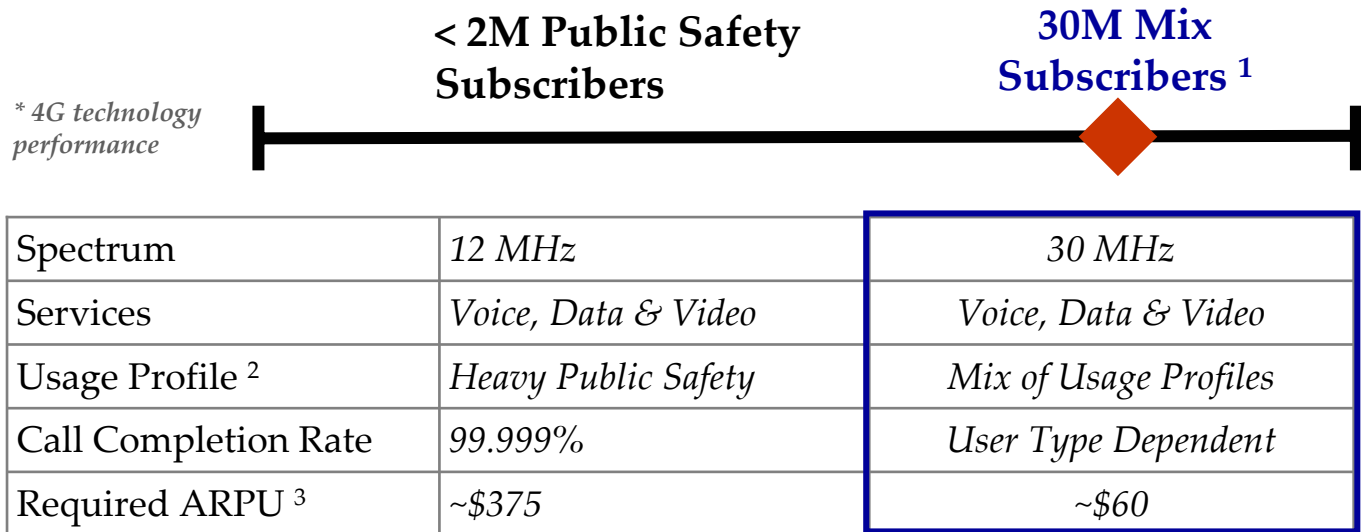
- *Public Safety Control*

- Only by having the FCC license held by an entity controlled by Public Safety will the public safety community have ultimate assurance that the network will be built and operated to meet its requirements

## 30 MHz of Spectrum Required to Sustain the Network

- The Public Safety Broadband Trust Proposal contemplates a terrestrial broadband network having 37,000 cell sites, requiring multi-billion dollar capital and operating expenditures, to achieve the expansive coverage required by Public Safety
- In excess of 30 million network subscribers are needed to earn an acceptable rate of return on this significant network investment
- The network capacity that must be generated to meet the projected usage demands of 30 million users or more requires at least 30 MHz of spectrum

# Nationwide Public Safety Network Requires 30 MHz



1. Mix of 2 million Public Safety subscribers, 6 million critical infrastructure subscribers, and 22 million commercial subscribers.
2. Public Safety subscriber average assumed monthly usage: 1,800 minutes of voice, 3,100 Megabytes of data; commercial & critical infrastructure assumed monthly average usage: 900 minutes of voice, 300 Megabytes. Nationwide Public Safety network assumes commercial subscribers on network have higher usage than average industry commercial subscribers.
3. Estimated monthly service payment from each subscriber to finance deployment and operation of a broadband network with 37,000 cell sites, and generate acceptable rates of return.

# Cyren Call Responses to CTIA

# **PSBT Broadband Network Model Background**

- **Focus was to understand capacity requirements for the shared public/private broadband network described in the Public Safety Broadband Trust Proposal**
- **This network capacity model incorporates projected Public Safety, Critical Infrastructure, and Commercial user requirements, since all user groups will share the same network**
- **A pure IP based network topology was assumed**
- **Capacity based on projected network subscriber needs in 2018**

# PSBT Broadband Network Model Background

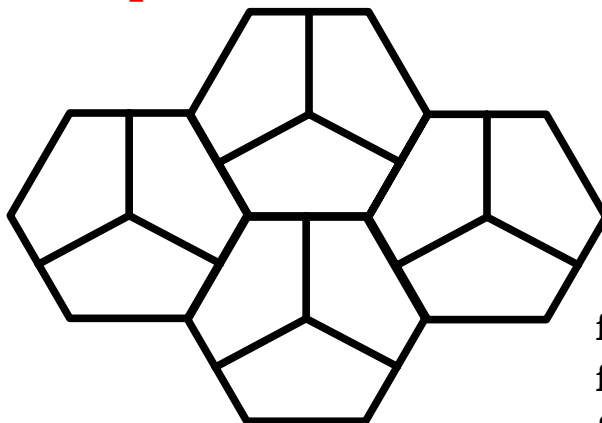
- A frequency reuse factor of 1 was modeled
- Three separate usage profiles were employed
  - *Public Safety, Critical Infrastructure, Enterprise Commercial*
- Five morphology types were incorporated into model
  - *Urban, Dense Urban, Suburban, Rural, Highway*
- Comprehensive model reflecting future technology
- Many factors or elements influence capacity of network
  - *Services Specifications*
  - *Population Densities*
  - *Channel Breakage*
  - *Service Adoption Rate*
  - *And more.....*
  - *Assumed User Profiles*
  - *Capacity of Radio Link*
  - *Cell Site Morphology*
  - *Shared Usage Effects on Capacity*

## CTIA Wrongly Claimed:

### Cyren Call used $n=3$ reuse factor

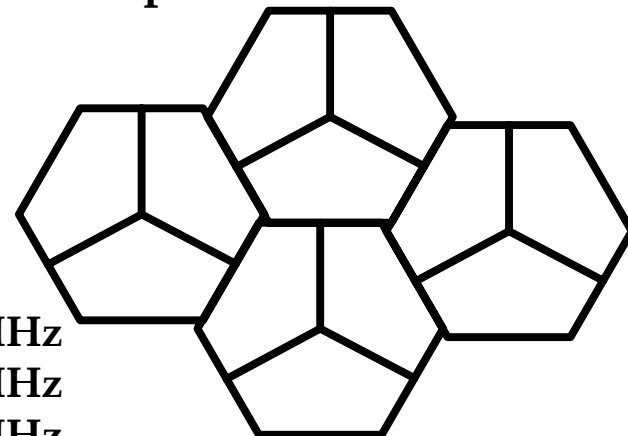
- CTIA incorrectly stated Cyren Call reuse factor as “1:3”
  - CTIA notation indicates a  $n=3$  reuse factor
  - 1 channel “carrier”, or 5 MHz per cell site, reused every 3<sup>rd</sup> cell site
- Cyren Call filing: stated a reuse of 3/1 (same as 3:1)
  - Cyren Call notation indicates  $n=1$  reuse factor
  - 3 channel “carriers”, or  $3 \times 5 \text{ MHz} = 15 \text{ MHz}$ , used at every site

**CTIA:  $N=3$**   
**Expressed as 1:3 or 1/3**



$f1 = 5 \text{ MHz}$   
 $f2 = 5 \text{ MHz}$   
 $f3 = 5 \text{ MHz}$

**Cyren Call:  $N=1$**   
**Expressed as 3:1 or 3/1**



## CTIA Wrongly Concluded:

### **Cyren Call assumed 4.5 hrs of streaming video per day per Public Safety User**

- Cyren Call: 93.75 min per day per Public Safety user or about 1.5 hrs, one third the level misstated by CTIA
- Cyren Call Public Safety Streaming Video Use Analysis:
  - *5.625 minutes of streaming video per busy hour per user - uplink*
  - *5.625 minutes of streaming video per busy hour per user - downlink*
- Assumed average of:
  - *7 work hrs per day*
  - *21 days per month*
  - *Fraction of call during working day = .6*
  - *Fraction of working day calls during the busy hour = .2*
- **CTIA confused Erlang averaging number (8100 sec) for daily usage**

## CTIA Wrongly Claimed:

### **Cyren Call overstated VoIP throughput rate at 24 kbps**

- **Cyren Call attached voluminous substantiating data to its capacity calculations – although some of that data showed 24 kbps throughput rates as industry average claims for voice calls, the model in fact used an 11.85 kbps throughput rate (see Tables B.2. and B.3. to Cyren Call's 9<sup>th</sup> NPRM Comments)**
- **CTIA may have confused codec Bit Rate with nominal throughput Bit Rate requirements**
- **CTIA also incorrectly assumed that the model did not include IP error correction and overhead factors in its assumptions, but in fact each of them was included**

# CTIA Wrongly Concluded That The Supported User Population Should Grow Linearly with Additional Spectrum

- CTIA used linear math, which is not accurate for calculating capacity in statistically modeled systems using blocking probabilities (such as telecommunication systems)
  - *Usage Capacity is not linearly related to Carrying Capacity (Spectrum/Trunks/etc)*
  - *Example (Based on Erlang B Call Modeling):*

Blocking	Trunks	Erlang B Capacity (Erlangs)	% of Trunks	% of Capacity
0.001%	5	0.2753	50%	16.2%
	10	1.697		
2%	5	1.6571	50%	32.6%
	10	5.084		

- CTIA incorrectly referenced Cyren Call blocking rate for Public Safety
  - *CTIA Showed Cyren Call used blocking rates ranging from .0001 – 2 percent*
  - *Cyren Call Blocking Rates used in the capacity model*
    - Public Safety – 0.001%
    - Critical Infrastructure – 1%
    - Commercial – 2%

## Conclusion

- Cyren Call has offered a financially and technologically realistic proposal to create and sustain a national Public Safety broadband network
- CTIA either misread or misstated numerous facts and assumptions that led them to incorrect conclusions on:
  - *Frequency reuse*
  - *Public Safety daily video streaming usage assumptions*
  - *VoIP nominal throughput requirements*
  - *Methodology and calculations to determine the number of subscribers that can be supported on 12MHz and 30 MHz with set blocking rate service assumptions*